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EMULEX

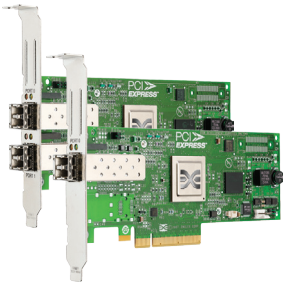
DATA SHEET

CONNECT

# LightPulse® LPe12000/LPe12002

## 8Gb Fibre Channel PCIe 2.0 Host Bus Adapter

### Unparalleled Manageability, Reliability, Performance and Ease of Deployment



LPe12000/LPe12002

Streamlined installation and management, unrivaled scalability, and industry-leading virtualization support make the single-port Emulex LightPulse LPe12000 and dual-port LPe12002 8Gb Fibre Channel (8GFC) Host Bus Adapters (HBAs) ideal solutions for enterprise, mixed-OS and virtual server environments.

### Proven Design, Architecture and Interface

Emulex LightPulse HBAs' highly integrated processor design minimizes onboard components to improve host performance and efficiency. Advanced error-checking features ensure the integrity of block data as it traverses the Storage Area Network (SAN). Emulex's firmware-based architecture enables feature and performance upgrades without costly hardware changes. The unique Service Level Interface (SLI™) allows use of a common driver across all models of Emulex HBAs on a given OS platform. Installation and management facilities are designed to minimize server reboots and further simplify deployment. Emulex is trusted by data centers the world-over, with more than 12 million HBA ports shipped and installed to date.

### Powerful Management Software for Maximum Data Center Efficiency

The Emulex OneCommand® Manager enterprise-class management application features a multiprotocol, cross-platform architecture that provides centralized management of all adapters provided by Emulex. This enables IT administrators to manage network connectivity with one tool for maximum efficiency. OneCommand Manager also features:

- **OneCommand® Manager plug-in for VMware vCenter Server**—enables comprehensive control of Fibre Channel HBAs and network (FCoE, iSCSI and TCP/IP NIC) connectivity solutions provided by Emulex from VMware's vCenter Server management console. Emulex OneCommand Manager plug-in for VMware vCenter Server supports both the new VMware vSphere 5.1 Web Client and the VMware vCenter Server desktop client with an identical feature set regardless of the client.

OneCommand®

LightPulse®

### Key Benefits

- Provides superior performance for the enterprise
- Integrates seamlessly into existing SANs
- Supports IT server consolidation and energy conservation initiatives
- Allows application of SAN best practices, tools and processes with virtual server deployments
- Protects sensitive data from unauthorized access
- Assures data availability and data integrity
- Improves IT staff productivity through simplified deployment and management

### Key Features

- Support for Message Signal Interrupts eXtended (MSI-X), improves host utilization and enhances application performance
- Support for 8GFC, 4GFC and 2GFC devices
- Comprehensive virtualization capabilities with support for N_Port ID Virtualization (NPIV) and Virtual Fabric
- Host to Fabric FC-SP authentication
- Long wave optical transceiver model available—allows the board to transmit signal over long distances
- Secure management with role-based administration integrated with Light Directory Access Protocol (LDAP) and Active Directory (AD) services
- BlockGuard® ready—end-to-end T10 PI data integrity for protection against silent data corruption events
- Common driver model allows a single driver to support all Emulex HBAs on a given OS
- Easy deployment of new firmware with minimal server reboots
- Efficient centralized administration of Emulex HBAs via powerful management tools
- PCIe 2.0 bus compliant, with PCIe 1.0 backward compatibility supported

# LightPulse® LPe12000/LPe12002

## 8Gb Fibre Channel PCIe 2.0 Host Bus Adapter

### Standards

- ANSI Fibre Channel: FC-PI-4, FC-FS-2, FC-FS-2/AM1, FC-LS, FC-AL-2, FC-GS-6, FC-FLA, FC-PLDA, FC-TAPE, FC-DA, FCP through FCP-4, SBC-3, FC-SP, FC-HBA and SMI-S v1.1
- PCI Express base spec 2.0
- PCI Express card electromechanical spec 2.0
- Fibre Channel class 2 and 3
- PHP hot plug-hot swap

### Architecture

- Single-port (LPe12000) or dual-port (LPe12002)
- 8GFC, 4GFC or 2GFC link speeds automatically detected
- Integrated data buffer and code space memory

### Comprehensive OS and Hypervisor Support

- Windows Server
- Linux
- Solaris
- VMware vSphere
- Windows Hyper-V
- Additional support is available from OEMs and partners

### Hardware Environments

- PowerPC,® SPARC,® x86, x64 and Intel® Itanium® 64-bit processor family

### Optical

- Data rates: 2.125, 4.25 and 8.5GFC (auto-detected)
- Optics: Short wave lasers with LC type connector
- Cable: Operating at 8GFC
  - 50/125µm (500MHz*km BW)-up to 50m
  - 50/125µm (2000MHz*km BW)-up to 150m

### Physical Dimensions

- Short, low profile MD2 form factor card
- 167.64mm x 68.91mm (6.60" x 2.71")
- Standard bracket (low profile available)

### Power & Environmental Requirements

- Volts: +3.3, +12
- Operating temperature: 0° to 55° C (32° to 131° F)
- Storage temperature: -40° to 70° C (-40° to 158° F)
- Relative humidity: 5% to 95% non-condensing
- 23 degree C wet bulb

### Agency Approvals

- Class 1 Laser Product per DHHS 21CFR (J) and EN60825-1
- UL recognized to UL 60950-1
- CUR recognized to CSA22.2, No. 60950-1-03
- Baurt-certified to EN60950-1
- FCC Rules, Part 15, Class A
- ICES-003, Class A
- EMC Directive 2004/108/EEC (CE Mark)
  - EN55022:2010, Class A
  - EN55024:2010
- Australian EMC Framework (C-Tick Mark)
  - AS/NZS CISPR22, Class A
- VCCI (Japan), Class A
- MIC (Korea), Class A
- BSMI (Taiwan), Class A
- EU RoHS Compliant (Directive 2002/95/EC)
- China RoHS Compliant

### Ordering Information

LPe12000-M8
- Single-port, multi-mode optic interface

LPe12002-M8
- Dual-port, multi-mode optic interface·

LPe12002-X8
- Dual-port, single-mode optic interface
- Long wave optical transceivers – allows the board to transmit a signal up to 1.4km when using 800-SM-LC-I, or up to 10km when using 800-SM-LC-L

LPe12100-OPT
- Emulex Certified Spare Optic Kit for LightPulse 8GFC HBAs
- QTY 1, 8GFC short wave lasers with LC-type connecter SFP+ optic
- Compatible with all Emulex LightPulse 8GFC Host Bus Adapters
- For use as an on-site spare optic

### Additional Features

Performance features
- Doubling the maximum Fibre Channel link rate from 4GFC to 8GFC and enhanced virtualization capabilities help support IT "Green" initiatives
- Frame-level Multiplexing and out-of-order frame reassembly increases link efficiency and maximizes HBA performance.

Data protection features
- End-to-end data protection with hardware parity, CRC, ECC and other advanced error checking and correcting algorithms ensure data is safe from corruption.

Deployment and management features
- Universal Boot capability allows the appropriate boot environment to be automatically selected for any given hardware.
- Boot from SAN capability reduces system management costs and increases uptime.
- Detailed real-time event logging and tracing enables quick diagnosis of SAN problems.
- Beaconing feature flashes the HBA LEDs, simplifying their identification within server racks.
- Environmental monitoring feature helps to optimize SAN availability.

### Management Features

- The Emulex OneCommand Manager application enables centralized discovery, monitoring, reporting, and administration of Emulex adapters on local and remote hosts. Powerful automation capabilities facilitate remote driver parameter, firmware and boot code upgrades. Advanced diagnostic features such as adapter port beaconing and adapter statistics help to optimize management and network performance while the environmental monitoring feature helps to maintain optimum host to fabric connections. In addition to the GUI interface, management functions can also be performed via a scriptable Command Line Interface (CLI) as well as a web browser. With in-band and out-of-band management capabilities, Emulex provides data center administrators with the greatest level of management flexibility.
- OneCommand Manager supports role-based management to facilitate administration of adapters throughout the data center without compromising security. Management privileges can be assigned based on LDAP and AD group memberships.
- Emulex's management instrumentation complies to Open Management Standards, such as SMI-S and common HBA API support, which enables seamless upward integration into enterprise storage and server management solutions.

EMULEX®

**World Headquarters** 3333 Susan Street, Costa Mesa, CA 92626 +1 714 662 5600
**Bangalore, India** +91 80 40156789 | **Beijing, China** +86 10 84400221
**Dublin, Ireland**+35 3 (0) 1 652 1700 | **Munich, Germany** +49 (0) 89 97007 177
**Paris, France** +33 (0) 158 580 022 | **Tokyo, Japan** +81 3 5325 3261
**Wokingham, United Kingdom** +44 (0) 118 977 2929

www.emulex.com

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